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REMARKS/ARGUMENTS

Claims 1-17 and 19-28 are pending in this application. The Examiner has withdrawn claims 29-37 from consideration. By this Amendment, Applicants AMEND claim 17 and CANCEL claims 18 and 29-37.

In response to the Restriction Requirement, Applicants affirm election of Group I, including claims 1-28. Applicants reserve the right to file a Divisional Application to pursue Group II, including claims 29-37. Further, in response to the Election Requirement, Applicants affirm election of Species I, including claims 1-28. Applicants reserve the right to file a Divisional Application to pursue Species II.

The Drawings were objected to for failing to designate Fig. 7 as --Prior Art--. Applicants have amended Fig. 7 to properly be designated as --Prior Art--. Accordingly, Applicants respectfully request reconsideration and withdrawal of the objection to the Drawings.

Claim 13 was rejected under 35 U.S.C. § 112, second paragraph as allegedly being indefinite. The Examiner alleged that the feature "curtain-like flows of a gas or the coolant" is unclear as to which element is being referred to. Applicants respectfully submit that the feature of "curtain-like flows" is clear and refers to either a gas or the coolant. As recited in claim 13, the "curtain-like flows of a gas or the coolant" are used so that the coolant is suppressed from overflowing from the opening of the reservoir as seen in Applicants' Figs. 1, 2, and 4. Accordingly, Applicants respectfully request reconsideration and withdrawal of the rejection of claims 13 under 35 U.S.C. § 112, second paragraph.

Claims 1 and 7-28 were rejected under 35 U.S.C. 103(a) as being unpatentable over Okuno et al. (5,827,113) in view of Chikuba et al. (6,381,830) and Huber et al. (6,390,896). Claims 2-6 were rejected under 35 U.S.C. 103(a) as being unpatentable over Okuno et al. in view of Chikuba et al. and Huber et al. as applied to claim 1 above, and further in view of O'Neil (5,176,850). Applicants respectfully traverse the rejections of claims 1-28.

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Claim 1 recites:

"A method for cutting a rare earth alloy using a wire with abrasive grains fixed to a core wire, comprising the step of: cutting the rare earth alloy with the wire traveling in a state that a portion of the rare earth alloy to be cut with the wire is immersed in a coolant containing water as the main component, the coolant having a surface tension at 25°C in a range of 25 mN/m to 60 mN/m."
(emphasis added)

Claim 17 recites:

"A method for cutting a rare earth alloy using a wire with abrasive grains fixed to a core wire, comprising the steps of: allowing the wire wound around a reel bobbin to travel between a plurality of rollers; supplying a first coolant containing water as the main component to portions of the wire wound around the reel bobbin or portions of the wire traveling near the reel bobbin; and cutting the rare earth alloy with the traveling wire while a second coolant containing water as the main component is supplied to a portion of the rare earth alloy to be cut with the wire; wherein the first coolant has a coefficient of dynamic friction against the rare earth alloy at 25°C of 0.3 or less." (emphasis added)

Applicants' claim 1 recites the features of "[a] method for cutting a rare earth alloy" and "a coolant containing water as the main component, the coolant having a surface tension at 25°C in a range of 25 mN/m to 60 mN/m." Applicants' claim 17 recites the features of "[a] method for cutting a rare earth alloy," "a first coolant containing water as the main component," and "the first coolant has a coefficient of dynamic friction against the rare earth alloy at 25°C of 0.3 or less." With the improved features of claim 1 and claim 17, Applicants have been able to provide a method for cutting a rare earth alloy with an abrasive grain-fixed wire while permitting the use of a coolant containing water as the main component (see, for example, paragraph no. [0015] on page 6 of the originally filed Specification).

First, Applicants agree with the Examiner that Okuno et al. fails to teach or suggest the feature of a workpiece that is a rare earth alloy. The Examiner has relied

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upon Chikuba et al. to allegedly teach this feature.

The Examiner alleged in the paragraph bridging pages 3 and 4 of the outstanding Office Action that "[i]t would have been obvious to one having ordinary skill in the art at the time the invention was made to provide apparatus of Okuno et al. with rare earth alloy in view of Chikuba et al. so as [to] ensure a long-time continuous operation by preventing wire snapping and by drastically reducing the number of times the coolant is replaced." Applicants disagree.

The Examiner has completely failed to explain how modifying Okuno et al. to utilize a workpiece of a rare earth alloy prevents wire snapping or reduces the number of times the coolant is replaced. In fact, there is absolutely no teaching or suggestion in either Okuno et al. or Chikuba et al. that wire snapping would be prevented or the number of times the coolant must be replaced would be reduced in the method of Okuno et al. by cutting a rare earth alloy, as opposed to cutting a workpiece of a ceramic, glass, silicon, or the like as disclosed in Okuno et al. Obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching, suggestion or incentive supporting the combination. In re Geiger, 815 F.2d 686, 2 USPQ 1276, 1278 (Fed. Cir. 1987).

Furthermore, Applicants respectfully point the Examiner's attention to the last full paragraph of column 1 of Chikuba et al. which discloses that "[n]one of these problems has ever been observed during cutting an ingot of silicon or glass in accordance with a conventional wire saw technique." That is, Chikuba et al. is clearly directed to solving the problems of cutting a workpiece of a rare earth alloy, and definitely not to the problems of cutting of a workpiece of silicon or glass. Okuno et al. teaches the use of a workpiece of a ceramic, glass, silicon, or the like, and, as the Examiner acknowledged, fails to teach or suggest the use of a workpiece of a rare earth alloy. In fact, Okuno et al. fails to teach or suggest that the method disclosed therein could or should be used to cut a rare earth alloy.

The Examiner is reminded that it is error to find obviousness where references

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diverge and teach away from the invention at hand. W.L. Gore & Assoc. v. Garlock Inc., 220 USPQ 303, 311 (Fed. Cir. 1983). Thus, the Examiner has improperly combined Okuno et al. and Chikuba et al. because the references clearly diverge and teach away from each other because Okuno et al. is directed to workpieces of ceramics, glass, silicon, or the like, and Chikuba et al. is directed to workpieces of a rare earth alloy.

Second, even assuming *arguendo* that Okuno et al. and Chikuba et al. can be combined, neither Okuno et al. nor Chikuba et al. teach or suggest the feature of "a coolant containing water as the main component, the coolant having a surface tension at 25°C in a range of 25 mN/m to 60 mN/m" as recited in Applicants' claim 1, or the features of "a first coolant containing water as the main component " and "the first coolant has a coefficient of dynamic friction against the rare earth alloy at 25°C of 0.3 or less" as recited in Applicants' claim 17.

The Examiner has admitted in the fourth paragraph on page 3 of the outstanding Office Action that Okuno et al. fails to teach or suggest either of these features.

Applicants agree with the Examiner that Chikuba et al. teaches the use of an coolant having a surface tension at 25°C in a range of 92 to 175 mPa.sec.

However, Chikuba et al. teaches in the Abstract of the Disclosure that the main component of the coolant is oil, **NOT water** as recited in Applicants' claimed invention.

Further, as acknowledged by the Examiner, Chikuba et al. fails to teach or suggest the feature of a coolant having water as the main component and having a surface tension at 25°C in a range of 25 mN/m to 60 mN/m as recited in Applicants' claim 1, or the feature of the first coolant having water as the main component and having a coefficient of dynamic friction against the rare earth alloy at 25°C of 0.3 or less as recited in Applicants' claim 17.

The Examiner has alleged that it would have been obvious to optimize the parameters of the coolant of Chikuba et al. However, the Examiner is reminded that "[a] particular parameter must first be recognized as a result-effective variable, i.e., a variable which achieves a recognized result, before the determination of the optimum or

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workable ranges of said variable might be characterized as routine experimentation." In re Antonie, 195 USPQ 6 (CCPA 1977) and MPEP §2144.05(II)(B). Thus, Applicants respectfully request that the Examiner provide a reference which teaches that the surface tension or the coefficient of dynamic friction against the rare earth alloy of the coolant was an art recognized result-effective variable at the time of Applicants' Invention.

In addition, even if it would have been obvious it would have been obvious to optimize the parameters of the coolant of Chikuba et al., the resulting coolant would not teach or suggest the coolant recited in the Applicants' claimed invention because the main component of the coolant of Chikuba et al. is oil, **NOT water** as recited in Applicants' claimed invention.

Thus, neither Okuno et al. nor Chikuba et al. teach or suggest the feature of "a coolant containing water as the main component, the coolant having a surface tension at 25°C in a range of 25 mN/m to 60 mN/m" as recited in Applicants' claim 1, or the features of "a first coolant containing water as the main component " and "the first coolant has a coefficient of dynamic friction against the rare earth alloy at 25°C of 0.3 or less" as recited in Applicants' claim 17.

The Examiner has relied upon Huber et al. to allegedly cure various deficiencies in the combination Okuno et al. and Chikuba et al. However, Huber fails to teach "a coolant containing water as the main component, the coolant having a surface tension at 25°C in a range of 25 mN/m to 60 mN/m" as recited in Applicants' claim 1, or the features of "a first coolant containing water as the main component " and "the first coolant has a coefficient of dynamic friction against the rare earth alloy at 25°C of 0.3 or less" as recited in Applicants' claim 17.

Furthermore, Huber teaches in col. 2, lines 40-41 that water is preferable as a cooling liquid. Since Chikuba et al. teaches a coolant having oil as a main component and fails to teach or suggest that the coolant could or should be modified to have a main component of water, instead of oil, there would have been no motivation to combine the

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alleged teachings of Huber with Chikuba et al. Thus, the Examiner has failed to establish a prima facie case of obviousness since the references offer no suggestion of the claimed combination. See In re Nielson, 816 F.2d 1567, 2 USPQ 2d 1525, 1528 (Fed. Cir. 1987).

Accordingly, Applicants respectfully request reconsideration and withdrawal of the rejection of claims 1 and 17 under 35 U.S.C. 103(a) as being unpatentable over Okuno et al. in view of Chikuba et al. and Huber et al.

The Examiner has relied upon O'Neil to allegedly cure various deficiencies in the combination of Okuno et al., Chikuba et al., and Huber et al. However, O'Neil fails to teach or suggest "a coolant containing water as the main component, the coolant having a surface tension at 25°C in a range of 25 mN/m to 60 mN/m" as recited in Applicants' claim 1, or the features of "a first coolant containing water as the main component " and "the first coolant has a coefficient of dynamic friction against the rare earth alloy at 25°C of 0.3 or less" as recited in Applicants' claim 17.

Accordingly, Applicants respectfully submit that none of the prior art of record, applied alone or in combination, teaches or suggests the unique combination and arrangement of elements recited in claims 1 and 17 of the present application. Claims 2-16 depend upon claim 1 and are therefore allowable for at least the reasons that claim 1 is allowable. Claims 19-28 depend upon claim 17 and are therefore allowable for at least the reasons that claim 17 is allowable.

In view of the foregoing amendments and remarks, Applicants respectfully submit that this application is in condition for allowance. Favorable consideration and prompt allowance are solicited.

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The Commissioner is authorized to charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account No. 50-1353.

Respectfully submitted,

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